U.S. DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

GREAT SMOKY MOUNTAINS NATIONAL PARK



WORLD HERITAGE SITE

PLANS FOR PROPOSED

FOOTHILLS PARKWAY

PROJECT PRA-FOOT 8G14 SLIDE REPAIR AT MILEPOST 15.10

PROJECT PRA-FOOT 8G14 -

BLOUNT COUNTY, TENNESSEE

DESCRIPTION OF PROJECT

Restoration and stabilization of the slide area near MP 15.10. Restoration of the parkway to its pre-slide IMPROVEMENT:

condition within the vicinity of the slide.

PROJECT LENGTH: 0.25 miles

Two-way, two-lane roadway with 11' lanes ROAD:

> TYPE <u>WIDTH</u>

SURFACE: 22' +/-Asphalt

DESIGN DESIGNATION:

ADT (2008)	782
ADT (2028)	1162
DHV	n/a
D	n/a
%Truck	n/a
V (MPH)	45
C/A	None
e(max)	10%

SPECIFICATIONS:

"Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects", FP-03 U.S.Customary Units.

MARYVILLE O Walland To Chattanooga GREAT SMOKY Look Rock MAMOUNTAINS. Abrams Creek NPS Look Rock Maintenance Area

INDEX TO SHEETS

SHEET NO	DESCRIPTION
A1	Title Sheet
A2	Symbols And Abbreviations
А3	Survey Information Sheet
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C1-C2	Tabulation of Quantities
D1-D2	Plans and Profiles
M1-M2	Erosion and Sediment Control Narrative and Plan
S1-S7	Standards and Details
T1-T4	Roadway Cross Sections

REG STATE

PROJECT PRA-FOOT 8G14

Α1

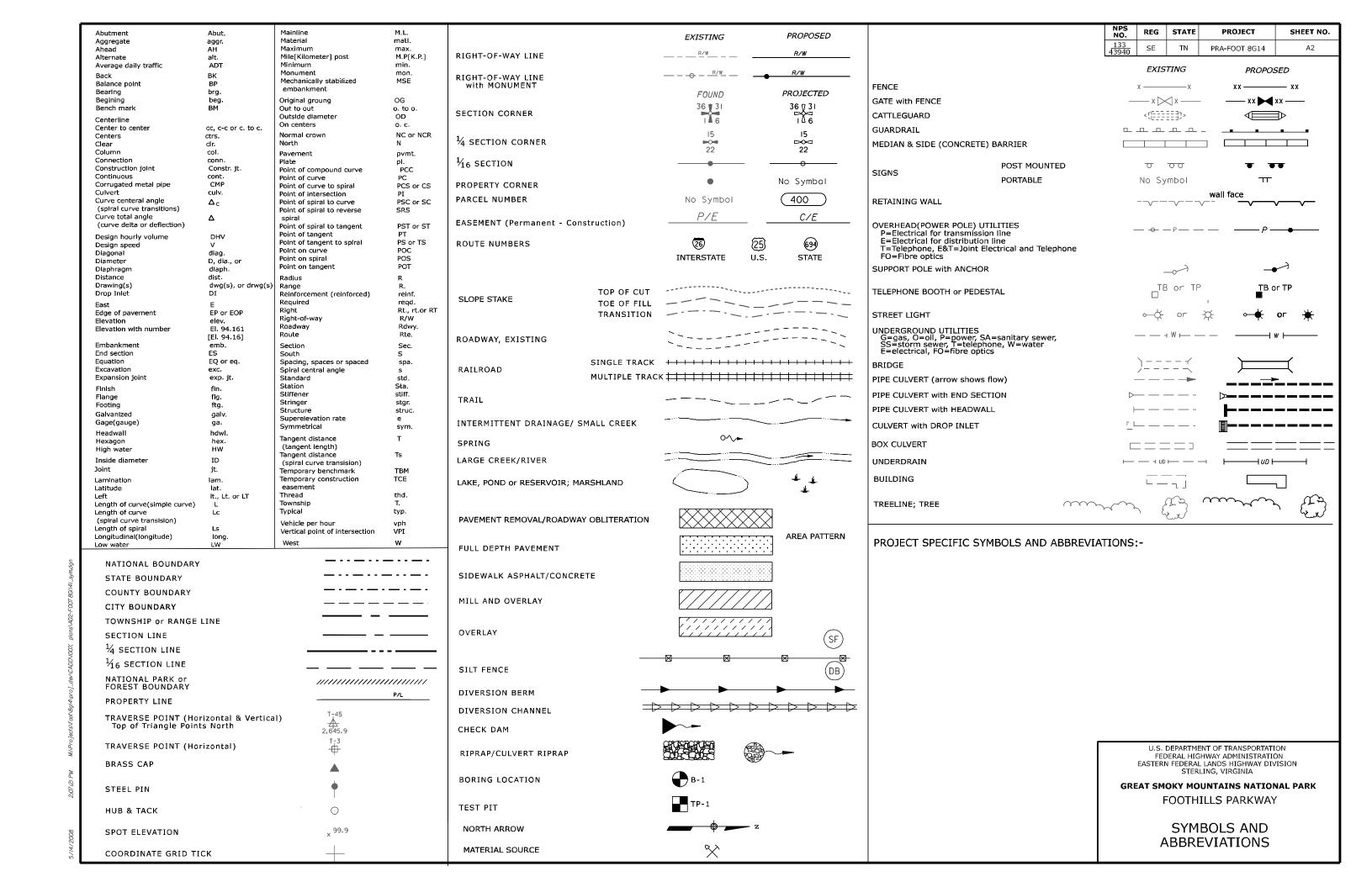
21

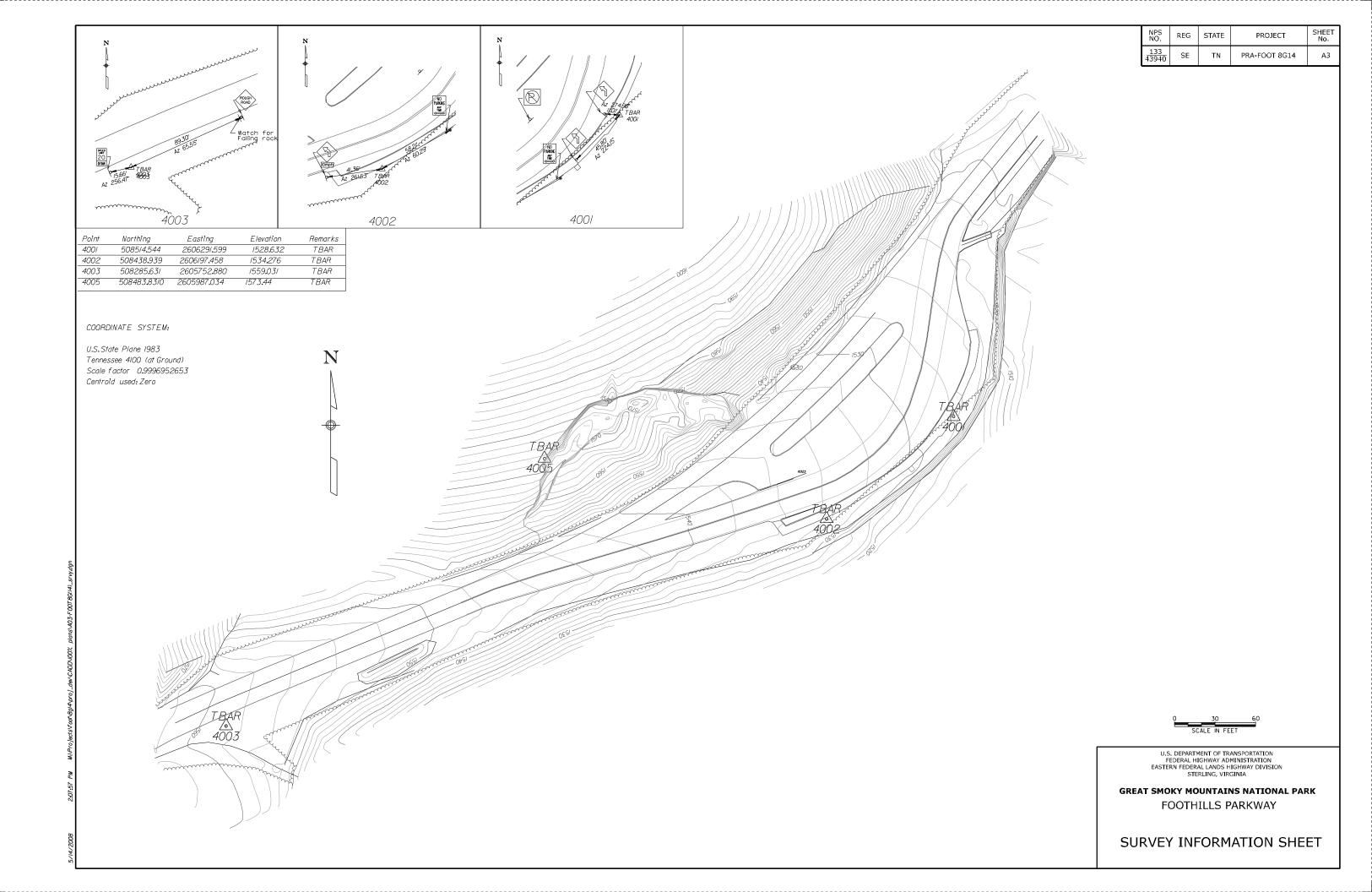
PLANS PREPARED BY



EASTERN FEDERAL LANDS HIGHWAY DIVISION STERLING, VIRGINIA MAY, 2008

PROJECT MANAGER LEAD DESIGNER Craig Sanders Alazar Feleke





NPS NO.	REG	STATE	PROJECT	SHEET NO.
133 43940	SE	TN	PRA-FOOT 8G14	В1





Special rock embankment, mechanically placed



Granular backfill

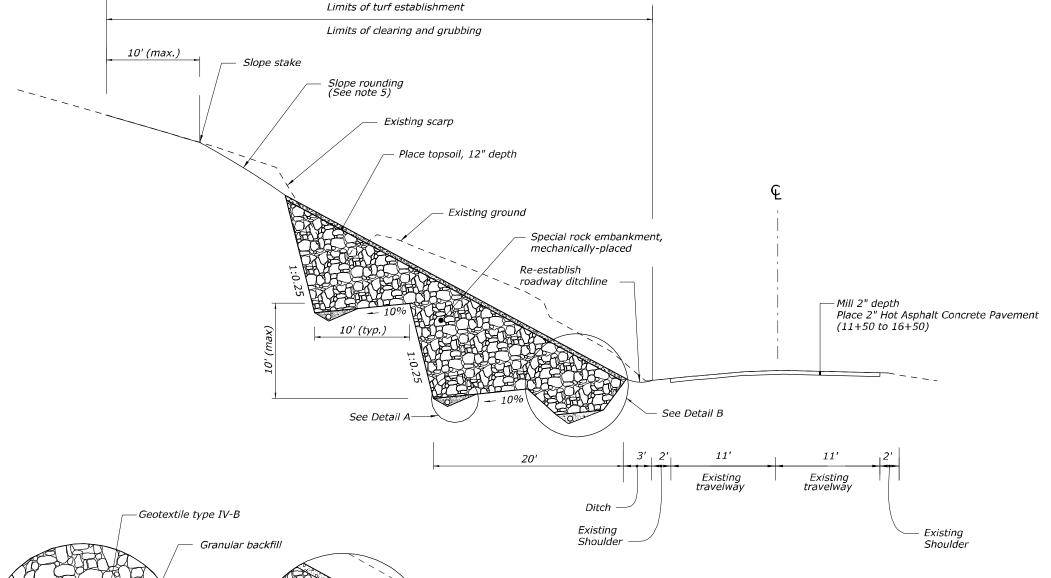
Notes:

- 1. Place topsoil and turf establishment on all disturbed areas in accordance with Sections 624 and 625.
- 2. Extend limits of repair to a minimum of 5 ft beyond the existing slide limits (10 ft max.) where able.
- 3. Bench repair as follows:
 - (1) Provide a minimum 20 ft wide horizontal bench into the existing slope along the base of the repair area; thereafter,
 - (2) Provide benches that are a minimum 10 ft wide horizontally and are a maximum 10 ft high vertically,
 - (3) Provide benches with a 10(H):1(V) negative crossslope (10%).
- 4. Construct underdrain using perforated plastic collector pipe, typical all benches, including toe bench, in accordance with Section 605 of the FP-03, and on a minimum 2% grade to allow for positive drainage. Obtain approval by the CO of the final pipe location and outlet.
- 5. Use spalls smaller than the minimum rock size to chock the larger rock solidly into position, fill the voids between the larger rock and to provide a stable, dense surface for the placement of topsoil.
- 6. Shape surface of slide repair to match existing adjacent slopes as much as possible.

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GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

TYPICAL SECTIONS



Geotextile type IV-B

Granular backfill

1:4

6" perforated plastic collector pipe

Detail B

Typical Section 12+30 to 14+10

Detail A

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GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

TABULATION OF QUANTITIES

plans\CO2-F00T8G(14)_qmty.dgn
Mi/Projects/foot/8gl4\proj_dev\CADDV00%
01:47 PW

				PANEL SIZ	E			Pay Item 63504-1000		
			WIDTH	HEIGHT	AREA	COLOR	QUANTITY	Temp. Traffic Control, Construction Signs	SUPPORT (NO PAY)	REMARKS
Detail No.	MUTCD NO.	SIGN TEXT	(in)	(in)	(sqft)	COMBINATION	ο	Sqft	ft	
	G20-2	END ROAD WORK	36	18	4.50	Black on Orange	2	9	26	
	R11-2	ROAD CLOSED	48	30	10.00	Black on White	2	20		Mount on Type III Barricade
	W1-6	ONE DIRECTION LARGE ARROW	48	24	8.00	Black on Yellow	2	16		Mount on Type III Barricade
	W8-7	LOOSE GRAVEL	24	24	4.00	Black on Orange	2	8	26	
	W13-1	ADVISORY SPEED 25 MPH	24	24	4.00	Black on Orange	2	8		Mount on Post W20-4
	W16-2	FLAGGER LOCATION	24	18	3.00	Black on Orange	2	6		Mount on Post W20-7a
	W20-1	ROAD WORK AHEAD	36	36	9.00	Black on Orange	2	18	26	
	W20-4	ONE LANE ROAD AHEAD	36	36	9.00	Black on Orange	2	18		
	W20-7a	FLAGGER SYMBOL	36	36	9.00	Black on Orange	2	18		
	W24-1	DOUBLE REVERSE CURVE	36	36	9.00	Black on Orange	2	18	26	
					-					
		Subtotal this Sheet			69.5		20	139.0	104	
		Rounded Total			*		*	139.0	*	

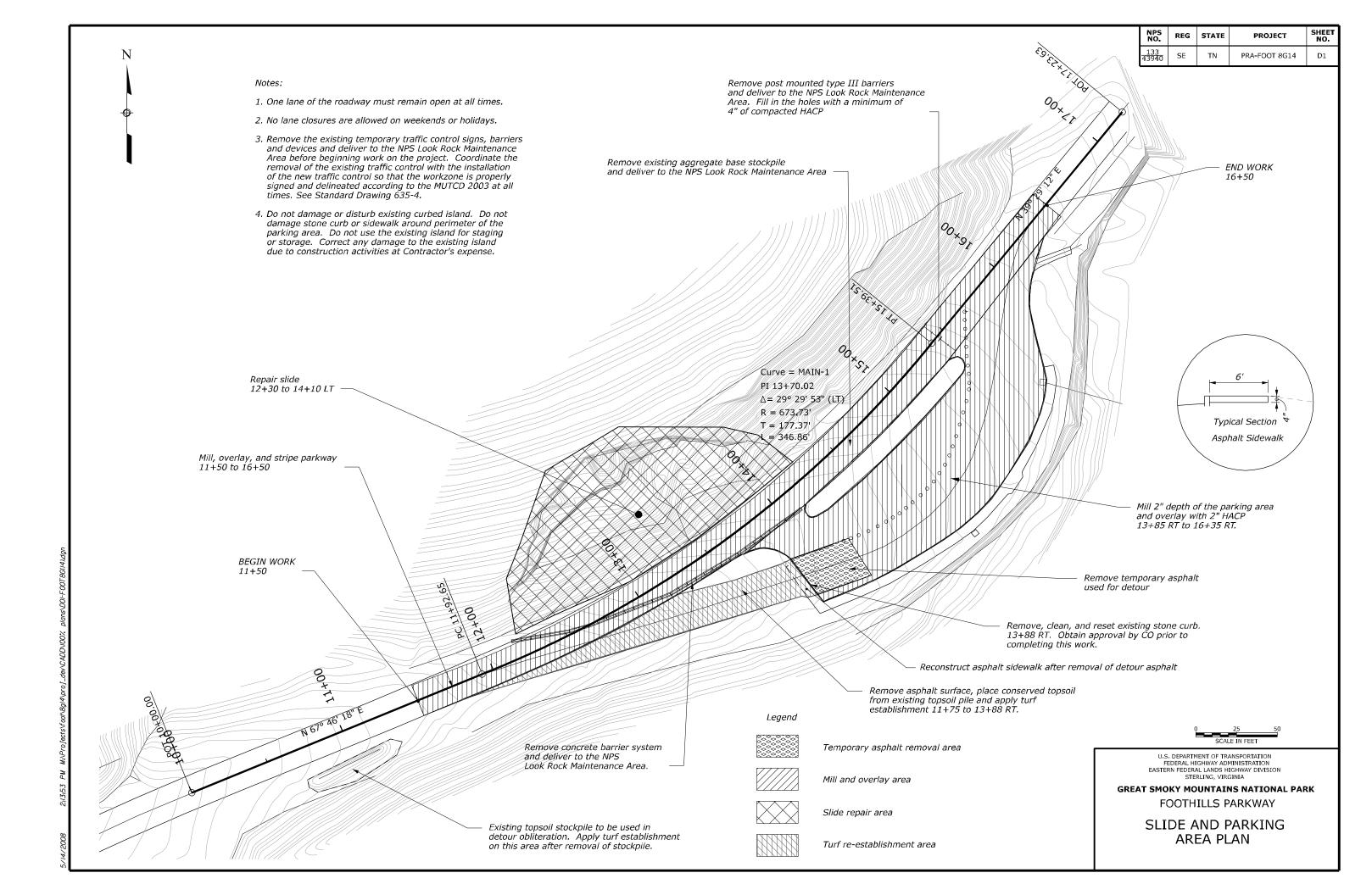
NPS NO.	REG	STATE	PROJECT	SHEET NO.
133 434940	SE	TN	PRA-FOOT 8G14	C2

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION STERLING, VIRGINIA

GREAT SMOKY MOUNTAINS NATIONAL PARK

FOOTHILLS PARKWAY

CONSTRUCTION SIGN SCHEDULE



4:58 P.W M:\Projects\foot\8gI4\proj.

1. GENERAL GUIDELINES

The Erosion Control Plans (ECP) are meant as a guideline for preventing erosion and controlling sediment. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sedimentation of rivers, streams, and impoundment such as lakes, reservoirs, bays and coastal waters. The measures consist of stabilization and structural practices, storm water controls and other miscellaneous pollution prevention controls.

Coordinate the installation, use and removal of erosion and sediment control measures with roadway construction activities to assure economical, effective and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds.

Install all erosion and sediment control measures as shown in the ECP or as directed by the Contracting Officer (CO). Do not modify the type, size or location of any control or practice without approval from the CO.

Preventing initial soil erosion is much more effective than trying to control eroded sediment. Therefore, stabilize all disturbed areas as soon as is practical, but no more than 14 days after construction activity has temporarily or permanently ceased.

Control only sediment-laden and runoff generated by the project site. Separate and quickly route clean, offsite runoff through the project by using sand bags, diversion channels, and other approved measures.

Do not drive construction equipment across flowing waterways.

Do not allow construction vehicles to track sediment offsite of the project limits.

In general, preserve existing vegetation, trees and shrubs when possible, and where specifically shown in the landscaping plans or as directed by the CO.

2. SITE DESCRIPTION

NATURE OF ACTIVITY

This project consists of restoration and stabilization of the slide area near MP 15.10 of Foothills Parkway and restoration of the parkway to its pre-slide condition within the vicinity of the slide in Blount County, Tennessee.

B. SEQUENCE OF CONSTRUCTION

* PHASE I (ESTABLISH PERIMETER CONTROLS):

Prior to any clearing, grubbing and excavation, construct perimeter controls to ensure that disturbed sediment does not leave the project site. Perimeter controls include silt fence, earth diversion berms, temporary sediment traps, and other approved measures outside the construction limits. Do not line, with plastic, those portions of the diversion channels that run along natural streambeds.

* PHASE II (INTERMEDIATE CONTROLS/STABILIZATION):

Apply intermediate controls during rough grading operations. Obtain the CO's approval before installing any controls not specified in the ECP. The CO may direct the installation of certain controls in order to forestall or mitigate potential or existing erosion problems.

On slopes over 20 feet high, apply permanent turf establishment according to Section 625 in 20 feet vertical increments as the work progresses.

Apply temporary turf establishment on uncompleted disturbed areas that will remain exposed for over 14 calendar days or as directed by the CO.

As soon as practical, but not to exceed 14 calendar days, apply permanent turf establishment to the finished slopes and ditches according to Sections 624 and 625.

REG

SE

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TN

PROJECT

PRA-FOOT 8G14

SHEET NO.

М1

At the end of each day's grading operations, shape earthwork to minimize and control erosion from storm runoff.

Where shown in the ECP or when directed by the CO, line steep, rough graded channels with plastic lining. Keep lining in place until final channel grading and permanent channel stabilization is in place.

Do not allow ponded water to encroach into travel lanes.

Provide silt fence around all stockpiled excavated roadway material. Apply temporary turf establishment to stockpiles remaining in place longer than 14 days or when directed by the CO.

PHASE III (FINAL CONTROLS/STABILIZATION):

After completion of roadway construction and landscaping do the following as directed by the CO:

Finish grading, pave, riprap, and apply permanent turf establishment to any remaining disturbed area.

Where necessary, replace eroded topsoil and reapply permanent turf establishment to disturbed areas where vegetation has not established.

Remove silt fence only after all upslope areas are stabilized and vegetation is well established.

Remove all other perimeter controls when directed by the CO.

C. SITE INFORMATION

* TOTAL AREA OF SITE:

Within the right of way limits including easements: 1.93 Acres

* TOTAL DISTURBED AREA:

Within the limits of construction including slope rounding: 0.63 Acres

POST DEVELOPMENT RUNOFF COEFFICIENT FOR THE SITE:

The weighted, overall post development runoff coefficient will be: C = 0.9

* NAME(S) OF RECEIVING WATERS:

Runoff from the project drains into Hesse Creek.

3. LIST OF STABILIZATION PRACTICES

A. TEMPORARY

Temporary stabilization practices used on this project include mulching, preservation of existing vegetation, silt fence, and other approved measures.

R PERMANENT

Permanent stabilization practices used on this project include permanent seeding with mulching, and preservation of existing vegetation.

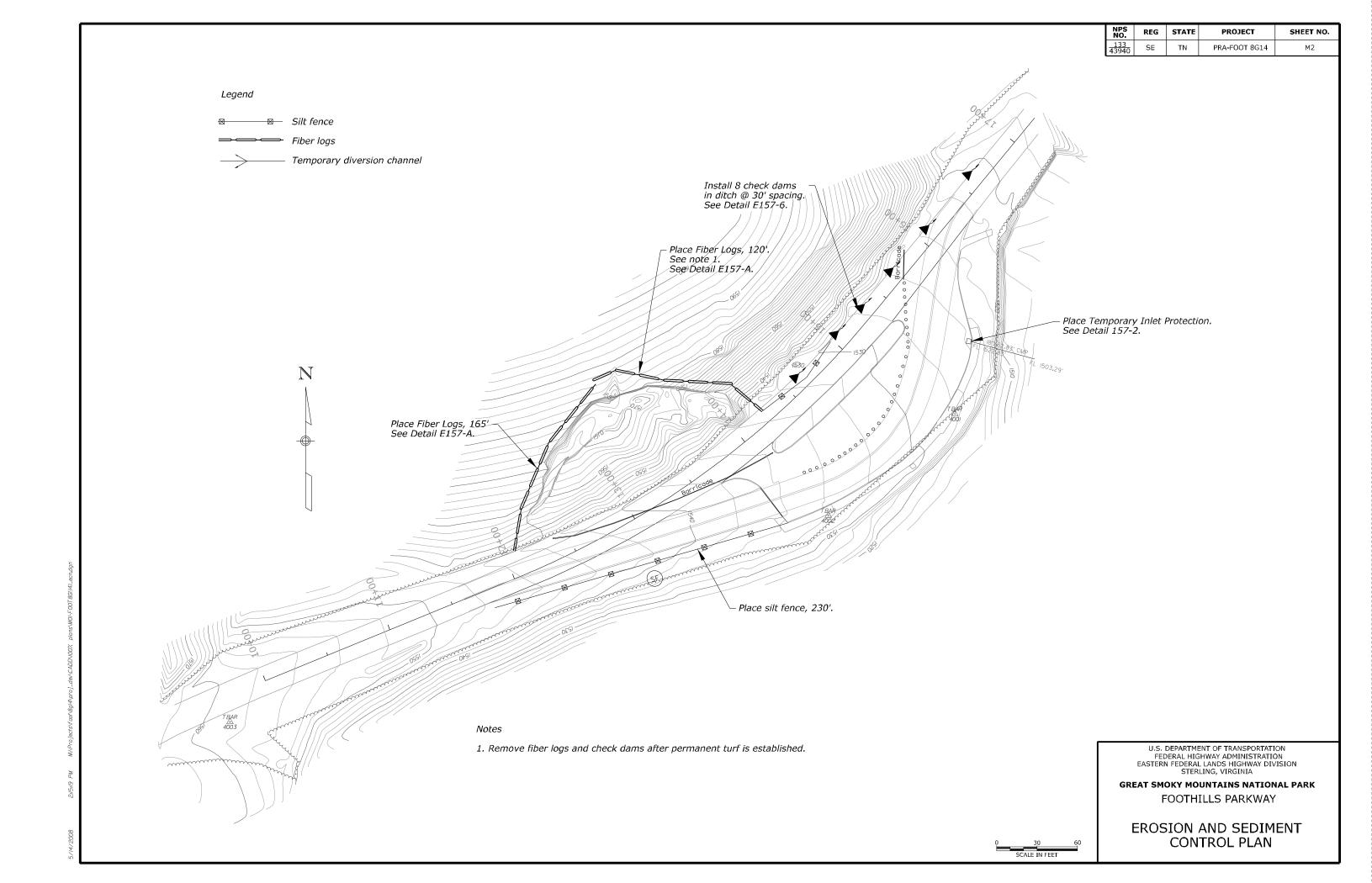
4. LIST OF STRUCTURAL PRACTICES

Structural practices used on this project include diversion berms, silt fence, and other approved measures.

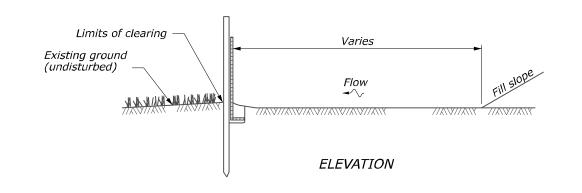
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION STERLING, VIRGINIA

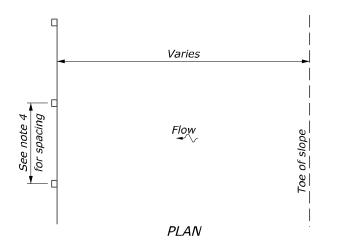
GREAT SMOKY MOUNTAINS NATIONAL PARK
FOOTHILLS PARKWAY

EROSION AND SEDIMENT CONTROL PLAN



- 1. Use drainage ditch installation for low flow conditions only when specified on Erosion Control Plan.
- Alternate preassembled silt fence options (geotextile, type V-B) will be allowed as long as specified dimensions are satisfied. Follow manufacturer's recommendations for installation procedures. All types must ensure silt fence remains attached to, and does not slide down, supporting posts.
- Install silt fence along ground contours. Curve ends
 of silt fence upgrade to prevent water from running
 around the ends.
- 4. 10 ft. (max.) spacing with fence support. 6 ft. (max.) spacing without fence support.





POST AND GEOTEXTILE INSTALLATION DETAIL

Steel or wood post

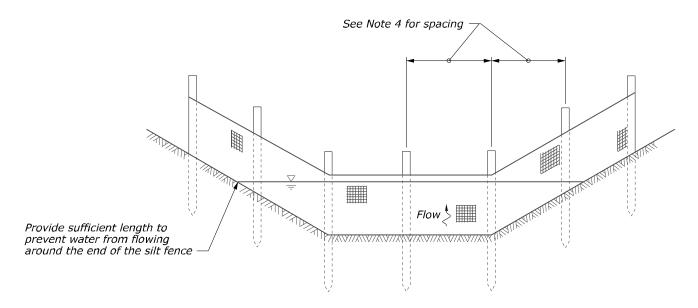
Geotextile, type V-A

6" min. trench

Backfilled and compacted soil

Support mesh

SILT FENCE INSTALLATION AT TOE OF FILL



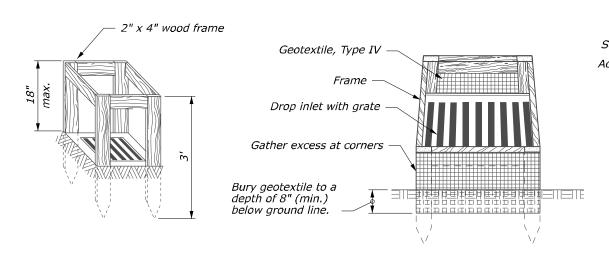
SILT FENCE INSTALLATION IN A DRAINAGE DITCH See Note 1

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY

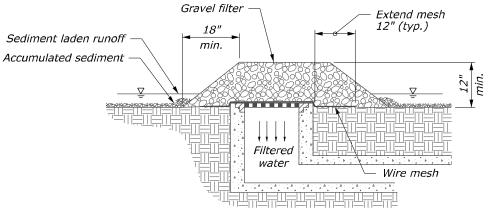
U.S. CUSTOMARY STANDARD

SILT FENCE

NO SCALE STANDARD APPROVED FOR USE 6/2005 STANDARD REVISED: 157-1 DRAFT: 10/2006



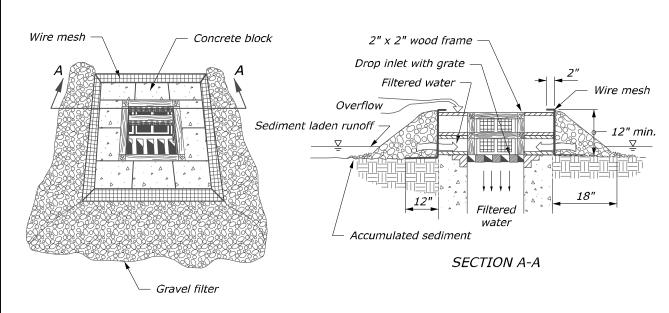
SILT FENCE DROP INLET PROTECTION (TYPE A)



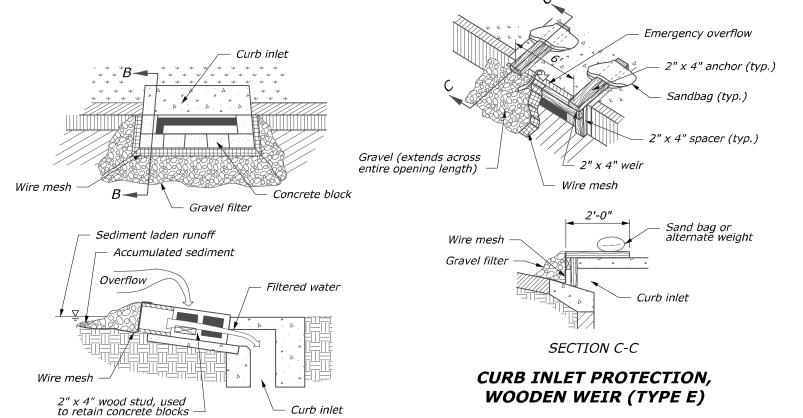
GRAVEL AND WIRE MESH
DROP INLET PROTECTION (TYPE B)

NOTE:

- 1. For gravel filters use 2" 3" diameter coarse
- 2. Use wire mesh with $\frac{1}{2}$ " $x \frac{1}{2}$ " openings.
- 3. Use Type A inlet protection in sump locations only.
- 4. Use Type B inlet protection only in sump locations where heavy concentrated flows are not expected. Do not use where ponding around the structure might cause inconvenience or damage.



BLOCK AND GRAVEL DROP INLET PROTECTION (TYPE C)



SECTION B-B

CURB INLET PROTECTION, BLOCK AND GRAVEL (TYPE D) U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY

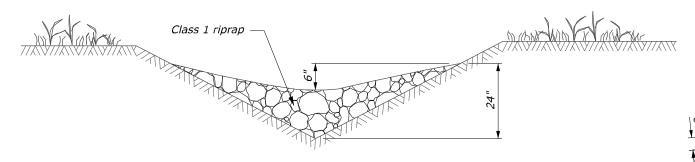
U.S. CUSTOMARY STANDARD

TEMPORARY INLET PROTECTION

NO SCALE

STANDARD APPROVED FOR USE 6/2005 STANDARD
REVISED: 157-2

14/2008



CHECK DAM SPACING

(S)

Class 1 riprap

1V:1.2H (typ.)

Ponded water

DITCH GRADE (G)

CROSS SECTION

V DITCH

PROFILE VIEW

DITCH

CHECK DAM SPACING S (ft)

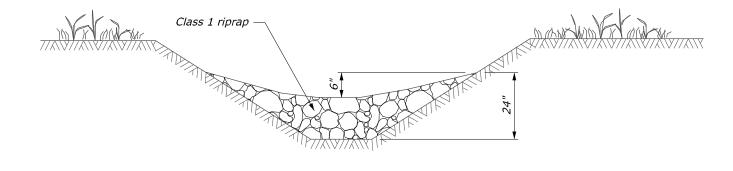
75

50

40

Note:

Choke Class 1 riprap with #57 stone.



5%	30
6%	25
	eck Dams below % ditch grades

DITCH GRADE * (G)

2%

3%

4%

CROSS SECTION

TRAPEZOIDAL DITCH

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY

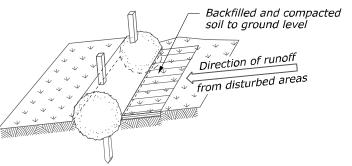
U.S. CUSTOMARY STANDARD

CHECK DAM

NO SCALE

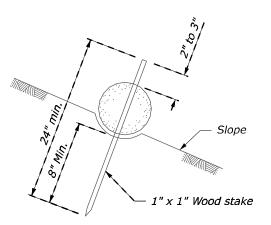
STANDARD APPROVED FOR USE 6/2005 STANDARD REVISED: 6/2007 157-6

Step 1: Excavate trench and install fiber logs



Step 2: Backfill soil against fiber logs

PROPERLY STAKED AND ENTRENCHED FIBER LOG



FIBER LOG STAKING DETAIL

NOTE:

NO SCALE

- 1. Drive stakes at each end and at 4' spacing until fiber log is secure to slope. Do not crush fiber log while staking. Live stakes may be used for permanent installations.
- 2. Use drainage ditch installation only in low flow conditions.

STAKES	REQUIRED
Fiber log length (ft)	Stakes required for each fiber log
25	8
20	6
12	4

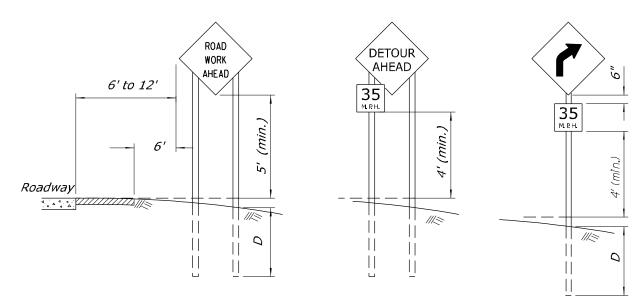
FIBER LOG	SPACING
Slope	Spacing (ft)
1:4 or flatter	40
1:3	30
1:2	20
1:1	10

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION

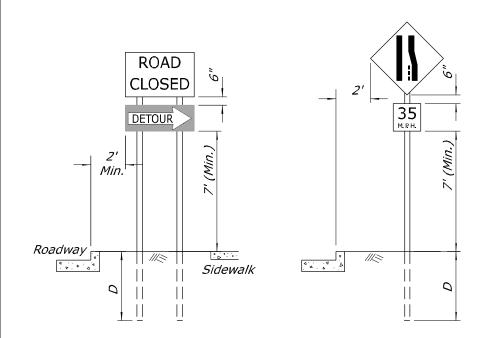
U.S. CUSTOMARY DETAIL

FIBER LOG

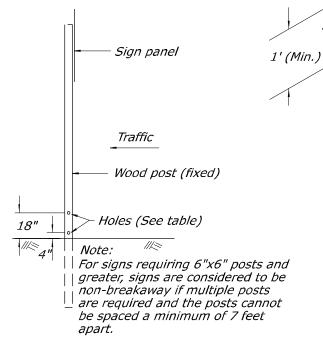
DETAIL APPROVED FOR USE DETAIL REVISED: DETAIL



RURAL AREA







BREAKAWAY SUPPORT DETAIL (FIXED SIGNS - 4" x 6" AND GREATER POSTS)

FIXED ROADWAY SIGNS

Post size	D	Hala Dia	Maximum Sign Area - Sq. ft.				
PUSE SIZE	Post size D Hole Dia.		1 Post	2 Posts	3 Posts	4 Posts	
4" x 4"	3'	None Req'd	10	20	\searrow		
4" x 6"	4'	1.5"	> <	35	50	70	
6" x 6"	4'	2"	> <	50	<i>75</i>	100	
6" x 8"	5'	3"	><	<i>85</i>	125	165	

Notes:

- 1. Wood posts are 4"x 4" unless otherwise
- 2. Mount signs that are wider than 3-feet or larger than 10 square feet on double
- 3. All lumber dimensions are nominal.
- 4. The Contractor may submit alternate details for portable signs, however, sign mounts hold the sign face in a vertical plane. Portable signs may be mounted lower than fixed signs when approved by the CO. Ensure all portable sign supports meet the requirements of NCHRP-350 for crashworthiness.
- 5. When parking is permitted within 200 feet of the sign, mount the sign a minimum of 7 feet above the pavement surface.
- 6. When approved by the CO and the Utility Company, utility poles may be used for sign mounting.
- 7. For posts greater than 4" x 4" see the Breakaway Support Detail. If breakaway design cannot be used, due to post spacing, the sign should be placed outside the clearzone or be shielded by barrier. Do not place holes in posts of non-breakaway signs

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION EASTERN FEDERAL LANDS HIGHWAY DIVISION STERLING, VIRGINIA

> U.S. CUSTOMARY DETAIL **FISH AND WILDLIFE REFUGE**

CONSTRUCTION TRAFFIC CONTROL SIGN MOUNTING

DETAIL APPROVED FOR USE 02/2007

NO SCALE

RIGHT LANE

CLOSED AHEAD

11' (Min.)

35 ⋈

(See note 5)

PORTABLE SIGNS

(See note 4)

DETAIL REVISED: 02/07 06/07 02/08 E635-01

LI	LENGTH AND SPACING TABLE					
APPROACH	LENGTH OF	CHANNELIZING DEVICE				
SPEED*	BUFFER SPACE	TAPER	BUFFER	WORK		
MPH	FFFT	AREA	SPACE	SPACE		
	, , , ,	SPACING IN FEET				
25	155	25	50	50		
30	200	30	60	60		
35	250	35	70	70		
40	305	40	80	80		
<i>45</i>	360	45	90	90		
50	425	50	100	100		
55	495	55	110	110		

*	Approach speed based on the regulatory posted speed,
	not the advisory speed.

SIGN SPACING TABLE				
ROAD TYPE	DISTANCE BETWEEN SIGNS IN FEET			
	Α	В	С	
Urban 40 MPH and less	100	100	100	
Urban 45 MPH and greater	350	350	350	
Rural	500	500	500	
Expressway/Freeway	1000	1500	2640	

NOTE:

1. Signs are shown for one direction of travel only. Place devices similar to those depicted for the opposite direction of travel.

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STATE

PROJECT

PRA-FOOT 8G14

NUMBE

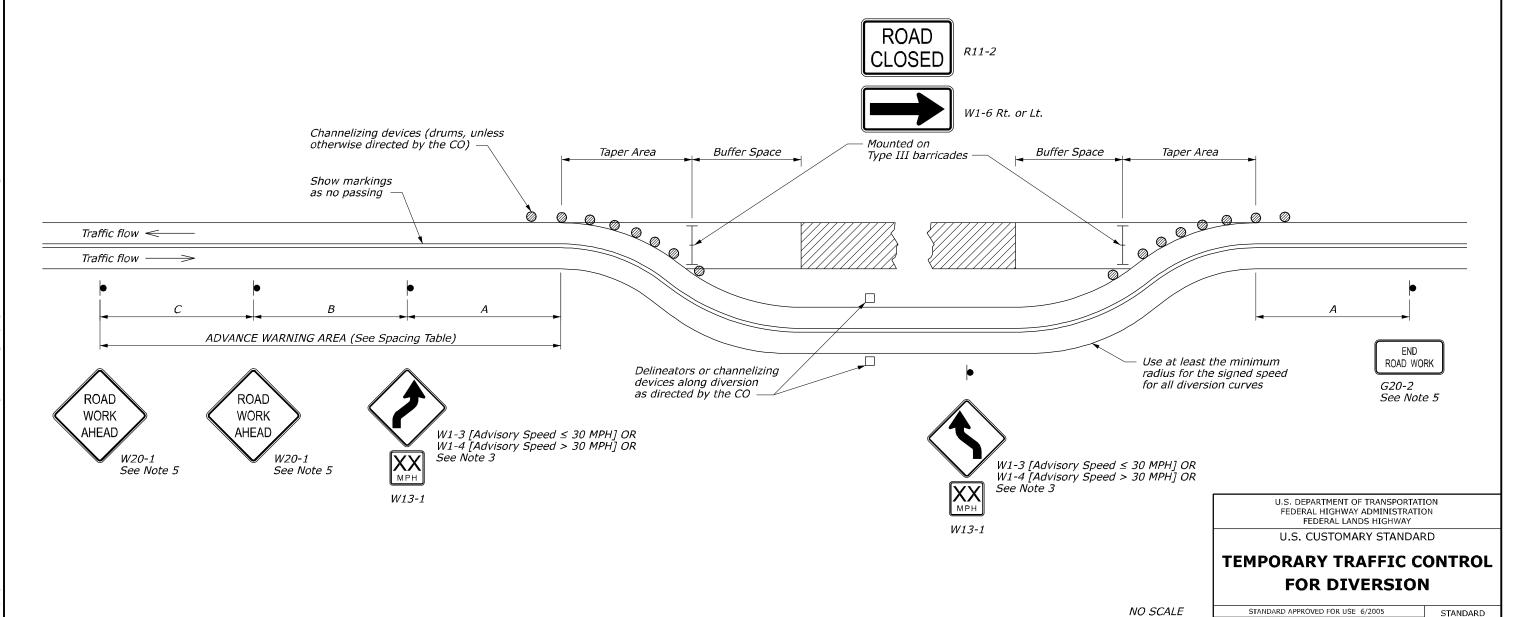
635-4

S6

- 2. If the area approaching diversion is not already signed and marked as a no passing zone, add signing and/or marking as appropriate. Remove conflicting pavement markings.
- 3. If the tangent distance along the temporary diversion is less than 600', use the "Double Reverse Curve" sign (W24-1) at the location of the first Reverse Curve sign and eliminate the second Reverse Curve sign.
- 4. Place channelizing devices outside temporary roadway.
- 5. If diversion is completely within the project limits, eliminate the "ROAD WORK AHEAD" (W20-1) and "END ROAD WORK" (G20-2) signs.
- 6. Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.

REVISED:

7. If signs will be in place more than 72 consecutive hours, use ground-mounted post.



REG	STATE	PROJECT	SHEET NO.
SE	TN	PRA-FOOT 8G14	S 7

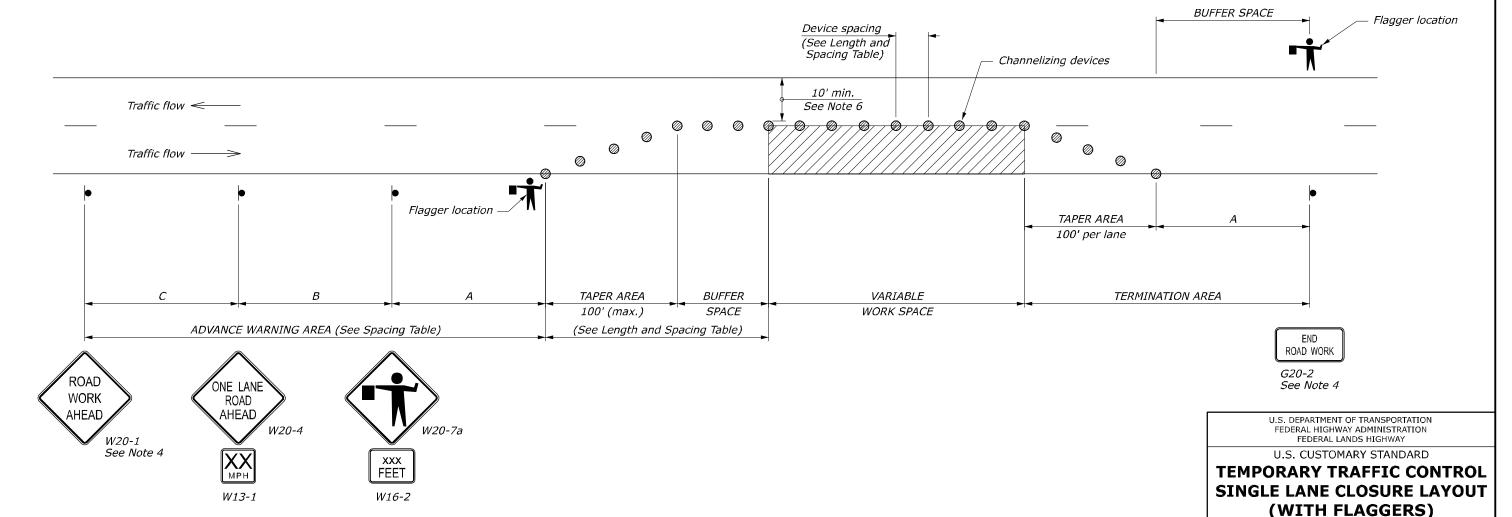
LENGTH AND SPACING TABLE					
APPROACH	LENGTH OF	CHANNELIZING DEVICE			
SPEED*	BUFFER SPACE	TAPER	BUFFER	WORK	
MDH	MPH FEET AREA SP.	SPACE	SPACE		
PIFIT		SPACING IN FEET			
25	155	20	50	50	
30	200	20	60	60	
35	250	20	70	70	
40	305	20	80	80	
45	360	20	90	90	
50	425	20	100	100	
55	495	20	110	110	

*	Approach speed based on the regulatory posted speed,
	not the advisory speed.

SIGN SPACING TABLE				
ROAD TYPE	DISTANCE BETWEEN SIGNS IN FEET			
	Α	В	С	
Urban 40 MPH and less	100	100	100	
Urban 45 MPH and greater	350	350	350	
Rural	500	500	500	
Expressway/Freeway	1000	1500	2640	

NOTE:

- 1. Signs are shown for one direction of travel only. Place devices similar to those depicted for the opposite direction of travel.
- 2. Final location and spacing of signs and devices may be changed to fit field conditions as approved by the CO.
- 3. For pilot car operation, mount the PILOT CAR FOLLOW ME (G20-4) sign at a conspicuous location on the rear of vehicle. Prominently display the name of the contractor on the pilot car.
- 4. If closure is completely within the project limits, eliminate the "ROAD" WORK AHEAD" (W20-1) and "END ROAD WORK" (G20-2) signs.
- 5. For night time flagging operation, provide floodlighting at flagger stations.
- 6. For project specific minimum width, refer to Special Contract Requirements, Section 156.
- 7. Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.
- 8. If signs will be in place more than 72 consecutive hours, use ground-mounted post.



NO SCALE STANDARD APPROVED FOR USE 6/2005 REVISED:

STANDARD 635-6 DRAFT: 1/2007

